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Steel Wheels in Mozambique

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This down-in-the-trenches story about using a Casspir fitted with steel wheels to demine in Mozambique in the early 1990s will make you feel like you are right there. Getting rid of the mines was not the only problem the deminers had; sometimes getting past the insurgents was more challenging.

During the early months of 1991, Garth Barrett and Brian Robinson, the directors of Cape Mine Clearance Support, a company called Minerva, negotiated a commercial mine clearance contract with the Mozambican national supplier of electrical power, Mozambique Electricidade de Libertacao de Mocambique (RENAMO). The civil war in Mozambique had long been out of water and electricity but was in the process of political reform at the time. Since there was a shortage of everything in Mozambique except Brown smoke, which was typical from PMN-2 explosions.

The contract Minerva signed with the Mozambican government was to clear 250 kilometers of the 300-kilometer-long line linking Maputo with the capital, Dinoura. This would later be changed to the current 70-kilometer line if it were in operation. The FRELIMO soldiers were telling horror stories about the number of soldiers already killed while trying to demine some pylons. Fast forward to the 1990s: several other governments also had to be made to ensure that we could do our work every day.

In South Africa, the apartheid government had supplied RENAMO Mozambique with steel wheels to be used in Mozambique in the early 1990s, but there was a lot of justified bitterness. Mozambique was economically devastated and there was a shortage of everything except Brown smoke—gunpowder used in the eyes and mind of the civilian population.

On June 29, 1991, the small convoy of two BMWs, a Casspir and an armored South African military supply truck (BTR), began the border to start mine clearance. At the time, we must have been the first South African deminers on any sort of commercial or humanitarian mine clearance project. Noticing the remains of several human bodies in the grass along the road, we realized that we would be the only people that had passed through there. We had little more than two months to complete the contract, and I have since heard of at least two fatalities, suspicion about success. On the first reconnaissance of the power line, a BTR driver had no way to signal to the Casspir driver that his BTR driver was in trouble behind the Casspir with an irate driver. Since the poor BTR driver had no way to signal to the Casspir driver that his BTR driver was in trouble, he had to wake up his officers and men who were found all over the small town. Postureality was not our best feature that day, and it was probably the most frustrating part of our task: getting stuck for 10 to 20 kilometers (6-12 miles) trap to the wrong direction for an hour's weight workout, then back to work.

None of the vehicles could start under its own power. Even the tanks were stopped by a push by the Casspir, embarrassed by a truck tire between the two vehicles. One BTR had no lift-off at the border post, we were met by the EDM representative, Mr. Fuad, who would become quite well-known. South Africa was in the process of political reform at the time, and South Africa was in the process of political reform at the time. Since there was a shortage of everything in Mozambique except Brown smoke, which was typical from PMN-2 explosions.

The distance from the cables to the steel-hulled Casspirs was not in use. For the first 20 kilometers (12 miles) after lift-off at the border post, we could see dozens of shot-up and burnt-out vehicles on each side of the road. At first, there was a shortage of everything in Mozambique—except bullet-ridden trucks—and only living quarters were basic, May 1991. An old truck unit for 22 years, except to hundreds of gold mine recruits on their way to the Casspir would require one man, who would become quite well-known. South Africa was in the process of political reform at the time.

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which we would traverse the minefield, running the steel-wheeled Casspir forward and backward, moving about half a wheel width to the side every run. The first mines exploding under the wheels took the side mirrors off, so Mechem had to move some steering fittings and blast-resistant mirrors, and we were dependent on the mirrors for steering accuracy. After completing a full width of about 15 meters (16 yards) on either side of the pylon, we would start a diagonal run across our previous tracks at 90 degrees. The sound of rapid explosions of hundreds of mines being detonated could be heard all day long, and the crew would be covered in black dust just from the first run. Areas of 40 meters by 60 meters (44 yards by 66 yards) around the pylons were cleared in this way—most of the mines detonating in the first sweep.

The majority of the mines that we encountered were PMN and Grana, complemented by PMD-6,5 PMN-2, M-860,7 OZM-4,8 and OZM-72.9 Many of the bounding mines were still fitted with trigger masts and would detonate if the Casspir wheels passed close to the trigger stake. It was not uncommon for the Casspir to pass within the safety of the Casspir trying to guess where the mine was going to jump out and explode as we approached the trigger stake. Van Blerk, Celeste and I carried on experimenting with the gas bags under the curious glare of our guard. The idea was that we would unroll the bags under the legs of the pylons, where the Casspir could not go to detonate the mines that were laid inside the four base legs of the pylons. We soon discovered that this did not work—every type of detonation we tried was not suitable for the type of detonation mechanism. The built-in anti-blast mechanisms prevented it from being detonated by such far-out detonating energy. PMN and PMD-6 mines readily detonated, but with the mix of mines that we faced, the gas-bag method was not reliable. Therefore, after being exposed to the gas bags, the area inside the pylon leg was cleared by manual detection and prodding to make sure that no PMN-2 mines remained behind. 

We destroyed an average of 200 mines around every pylon by these methods, but the actual number sometimes varied from pylon to pylon from about 80 to more than 300. There was no time to search every area for a manual detection search or for a formal quality assurance procedure. We simply drove up and down, backwards and forwards until no more detonations occurred and then walked over the area to inspect it visually.

At the time, we had a total belief in our unassailable system that was obviously based on more than a bit of ignorance but was also enforced because of the limited time. There was more than a little satisfaction in the fact that five of us had destroyed more than 12,000 mines in less than two months.

Our medical bag was well-stocked, but casualty evacuation would be made by Casspir to the Republic of South Africa, as there was no air evacuation available for either the soldiers or us. Fortunately, the team had no accidents, but the medical bag was in demand on a regular basis when injured soldiers arrived at the district. The FRELIMO soldiers had less medical equipment and support than we did and seemed to accept death fairly readily. We saw the horrific wounds caused by the PMN—with its charge of over 200 grams of TNT—on many occasions, when either soldiers or civilians were injured.

Once, van Blerk and Boates came across a RENAMO guerrilla who must have crawled at least a kilometre (0.62 mile) from where he detonated a mine in the main road. He was found with a leg missing. On another occasion, van Blerk and I heard an explosion about 500 meters (0.3 mile) away, saw the cloud of dust and found a teenage girl who had just lost her leg to a PMN AP mine, with a crowd of village people standing around, unable to help her. We bandaged her up, fitted a saline drip, injected her with Sosegon (a pain medication), and managed to find a truck driver who was willing to drive her to a hospital in Maputo where she could hopefully recover.

RENAMO must have taken exception to us so far working with their enemies, because they started to ambush us whenever we moved without our army escort. Realizing that we were unarmed, they often ran to the side of the road and emptied those rifles at us from less than 10 meters (11 yards) away.

As the team leader, I had the task of attending the occasional meeting in Maputo, or driving to Komatipoort on South Africa every few days to fax our handwritten situation reports to Medecin in Pretoria. I was usually driving around on my own and must have created an attractive target, because by the end of that year, I had survived seven ambushes, once or twice by the skin of my teeth. On several occasions, the bulletproof windows or windshield of the Mamba saved my life as bullets were stopped inches from my head. Once, however, I was driving a soft-skinned pickup truck when I hit an ambush in the Lebombo mountain pass and the civilian friend singing next to me was shot in the leg. With two flat tires, we had to abandon the vehicle and escape, first on foot and later by a civilian truck that I commandeered. The next day, when van Blerk came to help me retrieve the pickup, we were shot at in the same location.

On a few occasions, the garrison village of Motamba was half-heartedly attacked at night. Every gun and rifle would then return fire for the rest of the night. We would sit on the verandah of the top floor of our villa, watching the spectacular display of tracer bullets flying in all directions but mostly skyward. We knew that the next day would be a slow start because the soldiers would get little sleep that night.

Working seven-day weeks, we cleared the 60 pylons on time, and Lafosse started rebuilding the lane on the appointed day, September 1. Van Blerk, Boates and I would stay on for the next 18 months, assisting the Italian company in clearing holes for pylons foundations, making access lanes and access routes, and generally enjoying the warm Mozambican hospitality.
Humanitarian Demining as a Precursor to Economic Development, Lundberg | [from page 53] 


The Road to Mine Action and Development: The Life-Cycle Perspective of Mine Action, Paterson and Filipino | [from page 53] 

1. This phrase is from The World Bank, which has been in the forefront of planning, managing and financing post-conflict reconstruction since the wars arising from the break-up of Yugoslavia. The central role played by The World Bank is one of defining features of post-war reconstruction efforts, and during each period the Bank may be an important source of financing for demining.

2. Rostow’s trinity will remain a strong similarity to Figure 1 in the article from Issue 9.1 (Chip Button, “The Mining Link in Strategic Planning: ABA and the Endstate Strategy Concept for National Mine Action Planning”), which was developed independently in 1998 by Chip Button to illustrate the “Endstate Strategy approach” to developing a national mine action strategy for Cambodia. GICHD personally developed the life-cycle perspective to illustrate not only the role of programming would eventually diminish, but also that the principal purpose of programming a mine action program will evolve in a manner that can be simplified and planned for.

3. Raw data does not help decision-makers unless it is “analyzed” into information. Information is the right data presented in the right format at the right time to the right people.

Mine Action and the Millennium Development Goals, Van Der Linden | [from page 58] 


3. More detailed information on the United Nations Millennium Declaration of 2000, the eight MDGs, its related 18 targets and 46 indicators, can be found on the United Nations website.


Environmental Applications in Demining, McLean | [from page 60] 


4. Editor’s Note: Some countries and mine action organizations are urging the use of the term “mine free,” while others are operating the term “mine safe” or “impact free.” “Mine safe” connotes a condition where all landmines have been cleared, whereas the terms “mine safe” and “impact free” refer to the conditions in which landmines no longer pose a credible threat to a community or country.

5. From The Study of Methodical Applications in Demining, GICHD, 2004.


Chris North, Dombovero | [from page 62] 

1. To meet ODI level-three qualifications, a deminer must have specific training in disposal by detonation of larger UXO and artillery ammunition up to 240 mm.

2. A least-squares deminer should be qualified to render safe UXO for safe removal from the demining worksite and to undertake their final destruction.

3. These books can only be purchased by contacting Chris North at Chirnside98@btinternet.com or through his publisher, The Old Put Press.

Becoming Part of the Hope, Begley | [from page 65] 

Endnote: 1. HALO Trust is supported through donations by private and public donors. This includes the governments of Australia, Canada, Finland, France, Germany, the United Kingdom, Iceland, Japan, the Netherlands, New Zealand, Switzerland and the United States. Other donors include Aktion Landminen Stichting, the European Commission, Foundation Pro Milieu, The Association for Aids Research, The Prince of Wales Memorial Fund and the United Nations. More information can be found at http://www.halotrust.org.

Steel Wheels in Mozambique, Van Zyl | [from page 69] 

Endnote: van Zyl, Steel Wheels in Mozambique, Acacia Press, 2005. The device is an explosively-activated terrorist bomb. The PGR-1, a 15-kg, 15-cm, 6-inch ground-launched rocket is an irrational, unsound and widely discredited weapon. It is an idealized bomb, and is often referred to as the “(round)*

Footnotes | [from page 75] 


2. The PRB M449 is a plastic-bodied, low metal content, circular anti-personnel mine. A plastic mine that is circular in shape. The cover has a reinforced rim. The internal parts are made of plastic and metal. A core is made of plastic and metal. The core is an explosive charge enclosed in an outer casing and is designed to be exploded when stepped on or driven over. The core has a warhead with a point charge of high explosive and a fuze. The fuze is activated by a number of methods, such as pressure or impact, and is designed to make the mine fire when it is activated. For more information, see International Mine Action Standards (IMAS) http://www.mineactionstandards.org. Last accessed Oct. 2, 2005.

3. Editor’s Note: Some countries and mine action organizations are urging the use of the term “mine free,” while others are operating the term “mine safe” or “impact free.” “Mine free” connotes a condition where all landmines have been cleared, whereas the terms “mine safe” and “impact free” refer to the conditions in which landmines no longer pose a credible threat to a community or country.


Learning Takes Many Forms Within Mine Action Managers’ Course, Neitzy | [from page 72] 


Suriname Demining Mission, Raan | [from page 75] 


From Interventions to Integration: Mine Risk Education and Community Liaison, Durham | [from page 80] 


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